

Beyond the Nomenclature: An Empirical Investigation of Senior Secondary Students' Awareness of Family and Community Sciences under NEP 2020

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ABSTRACT

The National Education Policy (NEP) 2020 through National Curriculum Framework for School Education (NCF-SE) 2023 has repositioned Home Science as Family and Community Sciences (FCS), classifying it within Group 3 as an Interdisciplinary Area for secondary stage learners. The discipline covers diverse field and its awareness in students demands an analysis. This quantitative empirical study examines how senior secondary students enrolled in the subject comprehend this transition across four specific dimensions: Curricular Scope, Scientific and Technical Basis, Career and Professional Fields, and Educational and Vocational Pathways. A descriptive cross-sectional survey design was administered to N = 400 senior secondary students (Class XI, n = 214; Class XII, n = 186; 384 females, 16 male) across schools in Delhi. Data were collected via a validated 15-item Awareness Inventory evaluated on a three-point scale (Yes, No, Not Sure). Findings demonstrate an awareness gap: while conceptual recognition of curricular breadth (78.2%) and applied scientific foundations (71.8%) remains high, procedural awareness of higher education entrance protocols, professional certifications, and institutional vocational tracks drops sharply, with 58.5% indicating uncertainty or an outright lack of knowledge. The study suggests that there is a need to outline and embed procedural career roadmaps directly into secondary textbooks and institutional guidance frameworks.

Keywords: NEP2020, NCF-SE 2023, FCS, Secondary School Education, Quantitative Research.

Introduction

Home Science, known in different contexts as Home Economics or Family and Consumer Sciences, has developed as an applied and interdisciplinary field concerned with the wellbeing of individuals, families, and communities. Its areas of study bring together food and nutrition, human development, fabric and apparel, resource management, and communication and extension, linking scientific knowledge with everyday life and practical decision-making. In India, the discipline has long been positioned around the relationship between individuals, family and society, although its public and educational image has often remained narrower than its actual scope. In particular, perceptions of Home Science as a subject primarily associated with girls and domestic responsibilities have affected how the subject is viewed and chosen by students. Recent studies in Indian secondary education continue to report such gendered perceptions, even as the practical and life-skill dimensions of the subject are increasingly recognised (Jain et al., 2016; Seema & Kumari, 2025).

Home science is not untouched with the recent structural modernization of school curricula in India under the National Education Policy (NEP) 2020 prioritizes the removal of rigid hierarchies between academic subjects and vocational training (Government of India [GoI], 2020; Naveen, 2022). Within this reform architecture, the National Curriculum Framework for School Education (NCF-SE) situates the discipline under the designation Family and Community Sciences (FCS), placing it in Group 3 as an Interdisciplinary Area alongside Public Health and Sustainability (NCERT, 2023). This classification explicitly acknowledges the field's integration of natural sciences, behavioral sciences, and community development (Arora et al., 2022).

Despite this policy restructuring, disciplinary delivery within the secondary school ecosystem continues to confront persistent social perceptions that treat the discipline as domestic preparation (Jain et al., 2016; Seema & Kumari, 2025). Cognitive choice models grounded in Social Cognitive Theory (Bandura, 1989) show that an individual's academic choices and career trajectories are guided by cognitive appraisals of environmental information. Within school systems, student awareness serves as the direct environmental filter: learners cannot develop outcome expectations or pursue professional

trajectories if they lack clear knowledge of subject structure, practical applications, and institutional pathways (Jeon et al., 2025; Kriti et al., 2025).

While existing scholarship analyzes broad policy objectives (Arya et al., 2024; Parvanda, 2022), empirical measurements of how enrolled secondary students evaluate their discipline across structured awareness domains remain scarce.

Objective of the Study

The main objectives of the study were:

- To examine senior secondary students' awareness regarding the interdisciplinary curricular scope and the five core branches of Family and Community Sciences.
- To evaluate students' awareness of the scientific and technical basis, including empirical laboratory work, biochemical principles, and ergonomics.
- To assess the extent of students' awareness concerning applied career opportunities and professional roles in fields such as dietetics, public health, and apparel management.
- To determine students' procedural awareness regarding post-secondary educational routes, national entrance examination mappings, and institutional vocational/entrepreneurial pathways.

Methodology of the study

The nature of the study was to explore the field and understand the level of awareness in students at senior secondary level who are studying the subject.

Research Design

This study used a quantitative descriptive survey design (Creswell, 2009) which involves systematically collecting numerical data from a defined group of participants to describe their characteristics, perceptions, attitudes, or responses to the variables under investigation. This design was considered appropriate for obtaining a structured account of the participants' responses on their awareness.

Sample of the Study

The sample comprised N = 400 senior secondary students enrolled in Home Science from government and government-aided senior secondary schools across Delhi. The researchers collected the data from the students through the self-developed questionnaire.

- Grade Level: Class XI (n = 214; 53.5%) and Class XII (n = 186; 46.5%).
- Gender: Female (n = 384; 96.0%) and Male (n = 16; 4.0%).

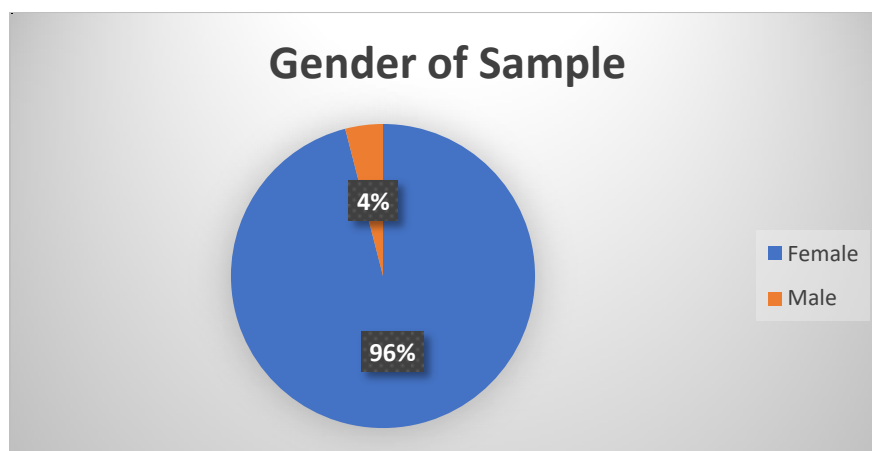


Figure1: Gender Distribution of Sample

The participant distribution reflects the historical gender skew of the course while capturing male representation enabled by flexible elective provisions under NEP 2020 (Enkali, 2019).

Tool for Data Collection

The data was collected through self-prepared awareness survey questionnaire. The questionnaire was designed to explore the awareness in students about various domains, subject matter, future prospects after studying FCS subject. It consisted of 15 items. The answer was restricted in three-point choices namely Yes, No and Not Sure.

S. No.	Broad Theme	Focus Area	Number of Items
1	Curricular Scope	the interdisciplinary nature and the 5 major branches.	4
2	Scientific & Technical Basis	the "Science" aspect (Chemistry, Ergonomics, Textile Science)	4
3	Career & Professional Fields	specific roles like Dietetics, Community Extension, and Public Health.	4
4	Educational & Vocational Pathways	degrees, entrance exams, and entrepreneurship.	3

Table 1: Description of Awareness Questionnaire

Content validity was established through formal evaluations by a panel of teacher educators and curriculum specialists utilizing the Content Validity Index protocol (Polit & Beck, 2006).

Analysis of data

The authors cumulated the response and calculated the response frequency for each item. The frequency table was created item wise and later the composite affirmative score for each theme was calculated by the authors.

Results and Findings of the study

In this section the result will be discussed in thematic manner. The awareness questionnaire was developed around four major themes. The percentage distributions across all 15 items and four broad themes for the N = 400 cohort are documented in Table 1.

Broad Theme	Item Statement	Yes (%)	No (%)	Not Sure (%)
Theme 1: Curricular Scope	Item 1: Interdisciplinary composition across arts and science	84.5	4.2	11.3
	Item 2: Recognition of the 5 branches (Nutrition, HD, RM, Fabric, Ext.)	79.2	6.8	14.0
	Item 3: Role of Resource Management beyond domestic accounting	72.0	9.5	18.5
	Item 4: Community extension as social development work	77.0	7.0	16.0
Theme 2: Scientific & Technical Basis	Item 5: Application of physiological and nutritional biochemistry	76.5	8.0	15.5
	Item 6: Textile testing, chemical finishing, and fabric construction	74.0	9.2	16.8
	Item 7: Ergonomic principles and physical work design	61.8	13.5	24.7
	Item 8: Empirical laboratory experimentation requirements	75.0	10.0	15.0
Theme 3: Career & Professional Fields	Item 9: Clinical dietetics and hospital nutrition management	78.5	6.5	15.0
	Item 10: Early childhood care and developmental counseling	66.2	11.8	22.0
	Item 11: Apparel merchandising and textile quality assurance	58.0	15.5	26.5
	Item 12: Public health nutrition and government program roles	54.5	18.2	27.3
Theme 4: Educational & Vocational Pathways	Item 13: Higher education entrance examinations (e.g., CUET mapping)	42.0	28.5	29.5
	Item 14: Undergraduate specialization options in B.Sc. FCS/Home Science	45.5	26.0	28.5
	Item 15: Institutional funding, incubation, and entrepreneurial startups	37.0	33.5	29.5

Table 2: Item-Wise Response Distribution of Senior Secondary Students (N = 400)

A broad understanding can be developed through looking at the composite thematic affirmation rate in figure 2. The figure 2 is explicitly showing that students has shown high affirmation or awareness towards theme 1 i.e. curricular scope on the other hand the area pertaining to educational and vocational pathways still need to be addressed.

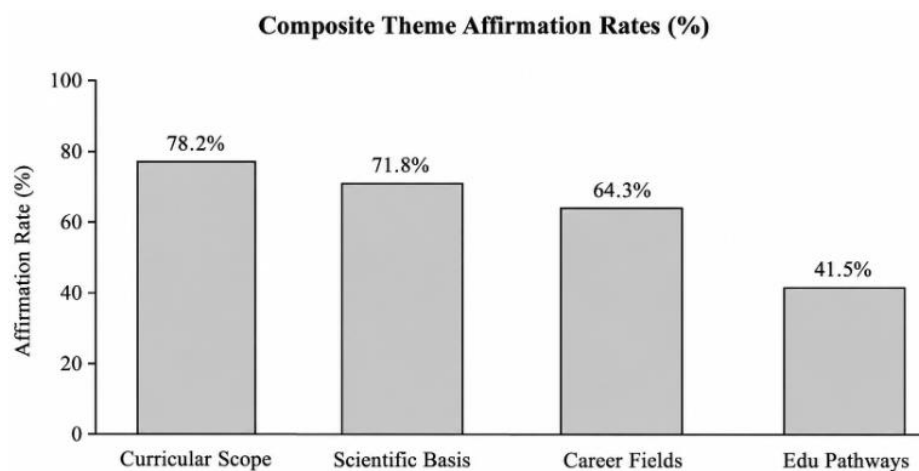


Figure 2: Composite Theme Affirmation Rates (%)

The theme wise finding from the data as follows:

Theme 1: Curricular Scope

Items assessing the broad parameters of the syllabus showed the highest affirmative recognition (Mean Yes = 78.2%). A substantial proportion of respondents (84.5%) affirmed that the discipline integrates natural and social sciences (Item 1). Recognition of the five sub-disciplines was confirmed by 79.2% of students (Item 2). Uncertainty was highest for Item 3 (18.5% Not Sure), indicating that while students recognize general branches, the application of Resource Management beyond domestic household budgeting remains unclear to nearly one-fifth of the cohort.

Theme 2: Scientific and Technical Basis

The scientific foundation of the discipline was acknowledged by a majority of respondents (Mean Yes = 71.8%). Biochemical principles in human nutrition (76.5%) and laboratory fabric identification tests (74.0%) received strong affirmative scores. However, Item 7 regarding ergonomic principles and physiological work measurement recorded lower recognition, with 24.7% answering Not Sure and 13.5% answering No. This points to an uneven comprehension of the technical specializations within the discipline.

Theme 3: Career and Professional Fields

Awareness showed a clear decline when moving from general subject matter to applied vocational fields (Mean Yes = 64.3%). While clinical dietetics was familiar to 78.5% of participants (Item 9), roles such as apparel merchandising and quality inspection (Item 11) were affirmed by only 58.0%, with 26.5% unsure. Similarly, career roles within public health nutrition and state welfare programs (Item 12) recorded an affirmative rate of only 54.5%, alongside 27.3% uncertainty and 18.2% negative responses.

Theme 4: Educational and Vocational Pathways

The lowest awareness across the entire inventory emerged in procedural educational trajectories and vocational institutional frameworks (Mean Yes = 41.5%). Over half of the cohort responded with No or Not Sure regarding entrance examination frameworks such as CUET domain mapping (58.0%; Item 13) and undergraduate specialization options (54.5%; Item 14). Knowledge of state incubation mechanisms, vocational funding, and institutional entrepreneurship support (Item 15) recorded the lowest affirmation in the entire study at 37.0%, with 33.5% responding No and 29.5% responding Not Sure.

Discussion

The statistical patterns demonstrate a persistent structural imbalance in student understanding it can be seen in figure 3.

The Awareness Asymmetry	
HIGH INTERNAL KNOWLEDGE	LOW EXTERNAL KNOWLEDGE
• Interdisciplinary Scope • Applied Sciences Base • Core Branch Definitions	• Entrance Exams (CUET) • Professional Degrees • Industrial Enterprise Path
(Mean Affirmation: 75.0%)	(Mean Affirmation: 41.5%)

Figure 3: Identified areas of high and low awareness

Students demonstrate strong grasp of *what* the discipline entails within the classroom, but display substantial deficits regarding *how* to apply it within formal post-secondary and career systems.

This asymmetry aligns with systemic implementation issues documented across secondary vocational education (Arya et al., 2024; Parvanda, 2022). While policy frameworks like NCF-SE 2023 deliberately place Family and Community Sciences within an interdisciplinary group to dismantle vocational and domestic stereotypes (NCERT, 2023), classroom instruction remains almost exclusively concentrated on board examination content delivery. As Dubey (2016) observed, secondary curricula frequently fail to articulate the external market utility of the subject, leaving learners uninformed regarding professional structures.

From the standpoint of Social Cognitive Theory (Bandura, 1989), procedural knowledge is a prerequisite for the formation of self-efficacy and outcome expectations. When senior secondary students do not know which higher education programs are available, how domain subjects map to entrance tests, or which professional sectors hire graduates, their career outcome expectations remain low (Jeon et al., 2025; Kriti et al., 2025). In the absence of explicit pathway information, societal stereotypes that characterize the course as a non-professional or purely domestic elective fill the void (Jain et al., 2016; Mishra & Singh, 2025; Seema & Kumari, 2025). The structural lack of procedural guidance thereby prevents positive subject awareness from translating into formal career trajectories.

Educational Suggestions and Way Forward

The empirical findings point to clear gaps in the operational delivery of the discipline. To raise student awareness and align secondary schooling with the objectives of NEP 2020 and NCF-SE 2023, the following evidence-based measures are recommended:

Curricular Embedding of Procedural Roadmaps: Textbook developers and curriculum designers at NCERT and state boards should incorporate an explicit "Academic and Professional Transitions" appendix at the end of each major syllabus unit. These sections must outline exact undergraduate degree titles (e.g., B.Sc. in Food Technology, Clinical Dietetics, Apparel Design, or Human Development). Specific test mappings for national and state entrance tests (such as CUET subject combinations) and professional certifications and regulatory bodies governing practice in public health, clinical nutrition, and interior ergonomics can be done.

Institutional Career Guidance and Information Dissemination: Secondary schools must operationalize the career counselling provisions specified in NEP 2020 (Arya et al., 2024; Barik et al., 2025). Guidance personnel should conduct dedicated informational sessions at the start of Class XI to demystify post-secondary entrance requirements and clarify university admission rules for FCS and its allied disciplinary courses. Proactively counter gender biases by publicizing the co-educational status of higher education programs, ensuring male students receive clear confirmation of their degree eligibility (Enkali, 2019). Further, Disseminate information on government entrepreneurial schemes, incubation centres, and self-employment micro-credits relevant to food, design, and community services (Radhika, 2024).

Practical Laboratory and Field Exposure: Because theoretical recognition of science and career fields exceeds technical comprehension (as seen in ergonomics and public health), schools must upgrade laboratory environments from domestic setups to functional scientific workrooms (Kuya, 2017; Sefu et al., 2023). Incorporating structured field visits to public health agencies, industrial food quality laboratories, and early intervention centres will help ground abstract syllabus topics in tangible professional realities.

CONCLUSION

The reclassification of Home Science as Family and Community Sciences within national educational policies provides an updated framework for the discipline. However, empirical evaluation of \$N = 400\$ senior secondary students in Delhi reveals an acute awareness asymmetry: high comprehension of curricular breadth and scientific foundations coexists with severe procedural blind spots regarding higher education entrances, professional degrees, and institutional entrepreneurship. Bridging this gap requires systematic institutional interventions. By integrating procedural roadmaps directly into secondary textbooks, operationalizing school career counselling, and modernizing laboratory instruction, educational authorities can ensure that the interdisciplinary vision of NEP 2020 translates into clear academic and professional outcomes for senior secondary students.

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